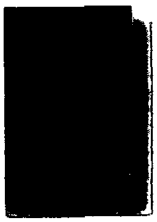


Moline Street PCB Site

Removal Action Completion Report

Draft

URS

January 2015

URS

January 19, 2015

Ms. Joyel Dhieux
On-Scene Coordinator
Preparedness, Assessment and Emergency Response
U.S. Environmental Protection Agency (EPA)
Region VIII (8EPR-SA)
1595 Wynkoop Street
Denver, CO 80202

Subject: Draft Removal Action Completion Report
Moline Street PCB Site, Aurora, Colorado

Reference: Administrative Settlement Agreement and Order on Consent for Removal Action, CERCLA Docket No. 08-2014-0002

Dear Joyel:

Enclosed are two copies of the Draft Removal Action Completion Report for the Moline Street PCB Site in Aurora, Colorado. This report was prepared by URS Corporation (URS) on behalf of The Dow Chemical Company (TDCC). Appendices for the draft report are provided on compact disk (CD) only.

If you have questions regarding the report, please contact me at 303-796-4672, Sarah Lave at 303-740-2680, or Tom Gieck at 970-256-8889.

Sincerely,

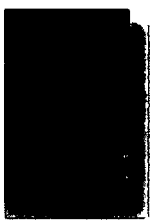
Karen M. Maestas

Karen Maestas, P.E.
URS Project Manager

Enclosures

cc: Tom Gieck, Remediation Leader, TDCC Representative
Sarah Lave, URS Deputy Project Manager
Louis Hard, HiTec Plastics, Inc.
Susan Borden, LT Environmental
Project File

URS Corporation
8181 East Tufts Avenue
Denver, CO 80237
Tel: 303.694.2770
Fax: 303.694.3946



Moline Street PCB Site

Removal Action Completion Report

Draft

URS

January 2015

MOLINE STREET PCB REMOVAL ACTION COMPLETION REPORT

(Reference: CERCLA Docket No. CERCLA-08-2014-0002)

Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

By: ______________________________

Printed Name: ______________________________

Title: ______________________________

Date: ______________________________

This page intentionally left blank

TABLE OF CONTENTS

List of Tables

List of Figures

TABLE OF CONTENTS

List of Appendices

This page intentionally left blank

List of Acronyms

$\mu g/100\ cm^2$	micrograms per one hundred square centimeters
ACI	American Concrete Institute
ACM	asbestos containing material
amsl	above mean sea level
ARARs	Applicable or Relevant and Appropriate Requirements
ASTM	American Society for Testing and Materials
bgs	below ground surface
BMP	Best Management Practice
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cm^2	square centimeters
CON	concrete
CRZ	Contaminant Reduction Zone
CTI	CTI and Associates, Inc.
DEB	other debris
EPA	United States Environmental Protection Agency
EXC	excavation
EZ	Exclusion Zone
F	floor
HASP	Health and Safety Plan
HEPA	High Efficiency Particulate Absorption
Hi-Tec	Hi-Tec Plastics, Inc.
IDW	investigation derived waste
LTE	LT Environmental, Inc.
mg/kg	milligrams per kilogram
NAD 83	North American Datum of 1983
NAVD 88	North American Vertical Datum of 1988
NGVD 27	National Geodetic Vertical Datum of 1927
NGVD 29	National Geodetic Vertical Datum of 1929
NPL	National Priority List
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl

pcf	pounds per cubic foot
PPE	personal protective equipment
ppm	parts per million
psi	pounds per square inch
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
SEM	Strategic Environmental Management, LLC
SEO	Office of the State Engineer
Site	Moline Street PCB Site
SOP	Standard Operating Procedure
SS	soil stockpile
Stage I Work Plan	Revised Draft Investigation and Removal Action Work Plan
Stage II Work Plan	Stage II Removal Action Work Plan
SVOC	semi-volatile organic compound
SZ	Support Zone
TAT	turnaround times
TCLP	Toxicity Characteristic Leaching Procedure
TDCC	The Dow Chemical Company
TSCA	Toxic Substances Control Act
UNCC	Utility Notification Center of Colorado
URS	URS Corporation
VOC	volatile organic compound
VSP	Visual Sample Plan
W	sidewall
WP	wipe sample
yd^3	cubic yards

Executive Summary

URS Corporation (URS) was contracted by The Dow Chemical Company (TDCC) to implement a removal action at 3555 Moline Street in Aurora, Colorado, also referred to as the Moline Street polychlorinated biphenyl (PCB) Site (Site). The removal action was required by CERCLA Docket No. CERCLA-08-2014-0002 and conducted in August – November, 2014. This Removal Action Completion Report documents the activities and results of the removal action.

TDCC operated a magnesium extrusion facility at the Site from the early 1970s until 1999. At least two presses were operated at the Site for extrusion of the raw magnesium materials, and at least one pit was used for wastes from the press(es). PCBs were present within hydraulic oils until 1979 when the United States government banned their manufacturing, processing, distribution, and use.

Several environmental investigations have been conducted at the Site. In 2014, the Site was placed under the "Time-Critical Removal Action" category by EPA and has a Superfund Site ID of #A898, but is not on the National Priorities List (NPL). The U.S. Environmental Protection Agency (EPA) required a soil removal action and established site-specific soil clean-up goals of 25 parts per million (ppm) total PCBs for the top twelve inches of soil and 100 ppm below the top twelve inches of soil to the water table. The clean-up level for the interior building surfaces was 10 micrograms per one hundred square centimeters cubic centimeter ($\mu g/100\ cm^2$).

To achieve these cleanup goals, a removal action was conducted in 2014. The removal action consisted of:

- Cleaning the exposed surfaces (wall, floor, etc.) inside of the building to remove PCB-contaminated dust;
- Selective demolition;
- Removal of PCB-contaminated concrete and soil; and
- Site restoration (e.g., placement of clean soil and new concrete where the PCB-contaminated materials had been removed).

Confirmation samples were collected to confirm that clean-up levels were achieved. At one location, some PCB-contaminated soils were left in place in the subsurface (4-ft deep) at the interior wall of Building D. The soil at this location could not be further excavated because of the required clearance of 3-feet (3-ft horizontally) from the edge of the footer. This clearance was necessary to avoid excavating soil from an area that may be helping resist structural load, which would potentially reduce the stability of the building wall. This issue was communicated to EPA at the time, and EPA approved leaving the soils in place so that the building could remain intact.

The excavations were backfilled with clean soil, and the concrete was replaced. Post-removal site controls, such as environmental covenants will be required at the Site.

This page intentionally left blank

URS Corporation (URS) prepared this Removal Action Completion Report on behalf of The Dow Chemical Company (TDCC) to document the completion of the polychlorinated biphenyl (PCB) removal action for 3555 Moline Street in Aurora, Colorado, also known as the Moline Street PCB Site (Site). The Administrative Settlement Agreement and Order on Consent (Settlement Agreement) for the Site was effective January 30, 2014 under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (reference CERCLA Docket No. CERCLA-08-2014-0002).

TDCC notified the U.S. Environmental Protection Agency (EPA) that URS was their selected contractor on January 31, 2014 and URS prepared a *Revised Draft Investigation and Removal Action Work Plan* (Stage I Work Plan), which URS submitted to EPA on February 28, 2014 (URS 2014a). Following EPA approval of the Stage I Work Plan, URS conducted environmental investigation activities on Site. On May 1, 2014, URS submitted a Stage I Summary Technical Memorandum (URS 2014b) that summarized the field activities and investigation results. Following completion of the investigation, the *Stage II Removal Action Work Plan* (Stage II Work Plan) was prepared and submitted to EPA on May 23, 2014 (URS 2014c). EPA approved the Stage II Work Plan on June 12, 2014, and the removal action was conducted August through November, 2014. This report provides documentation of the removal action activities and results.

1.1 BACKGROUND

This section summarizes the Site background including the site investigation and regulatory history. The investigative and regulatory history is detailed further in the Stage I Work Plan (URS 2014a).

1.1.1 Site Description

The Site is located in Aurora, Colorado near the southwest corner of the intersection of Smith Road and Moline Street (Figure 1). The Site covers approximately 1.8 acres and includes a building with an address of 3555 Moline Street, as shown in Figure 2. The Site has an elevation of approximately 5,300 feet above mean sea level (amsl) and is relatively flat, sloping slightly to the southwest toward Sand Creek located approximately 2,000 feet south of the Site.

Figure 2 shows the Site vicinity. The removal action area is part of a larger property, which includes two parcels with a building at 3555 Moline Street (the Site) and a northern building with an address of 11380 East Smith Road with a combined property size of 5.7 acres. The property was developed from 1960 through 1972 and included the two buildings, paved asphalt parking lots to the north and east, and paved concrete storage areas between the two buildings. At the time of the removal action, the northern building (11380 East Smith Road) was occupied by Hi-Tec Plastics, Inc. (Hi-Tec), which operates a plastics recycling operation. The Site building (3555 Moline Street) has been vacant since 2009 and was purchased on February 14, 2014 by Hi-Tec as the Bona Fide Prospective Purchaser. Figure 3 identifies individual sections of, and attachments to, the Site building. For clarity when describing the activities, areas of the building have been labeled with designations of "Building A," "Building B," and so forth. Likewise, the excavation areas were sequentially numbered for clarity when referencing them in the documentation.

The surrounding properties include commercial and light industrial uses. A landfill is located immediately adjacent to the west of the Site and has mounded surface features and a solar panel array at the surface. The Denver County Jail is located west of the landfill. A food distribution facility is present to the south of the Site across a vacant field. Several local businesses and warehouses exist east of the Site across Moline Street. A railroad right-of-way parallels Smith Road north of the Site.

1.1.2 Site Operational History

TDCC began constructing the facility in 1969 including the extrusion building (3555 Moline St.). In 1972, a machine shop (11380 East Smith Road) was constructed. The magnesium extrusion facility processed approximately 15 million pounds of magnesium per year in the late 1990s, which occurred within both the Site building and the building to the north (11380 East Smith Road). Raw magnesium materials (i.e., ingots and billets) were brought in by truck and railcar and were stored in the yard area and/or warehouse area. Ingots were extruded through a 4,200-ton press to form poles between 7 and 9 inches in diameter, which were then cut into billets and extruded through a 1,800-ton press into various shapes and profiles. These processes were dry machining, as no cutting fluids were used. The facility operated year-round for 24 hours per day (URS 1999).

In July 1999, Timminco Corporation assumed the lease, purchased the operating assets, and continued the magnesium extrusion operations until they transferred their operations to Mexico in August 2009. The property was purchased by Aurora Smith Road Ventures, LLC, c/o David Goodell in 2007 (LTE 2013). The Site was unoccupied from 2009 until 2011 when Hi-Tec leased the property to operate a plastics recycling operation. The plastics recycling operations currently occur in the former machine shop building (11380 East Smith Road), but the extrusion building (3555 Moline St.) has remained unused, other than temporary storage of miscellaneous personal property at the east end of the building.

TDCC identified that the several chemicals had been historically used to operate and clean the press including hydraulic oils and solvents (TDCC 1999). PCBs were present within hydraulic oils until 1979 when the United States government banned their manufacturing, processing, distribution, and use. At least two presses were operated (a 500-ton press and an 1800-ton press), and at least one pit was used for wastes from the press(es).

1.1.3 Site Investigation and Regulatory History

Several environmental investigations have been conducted at the Site. Numerous Phase I and Phase II assessments were conducted on behalf of different companies related to property transfers. In 2014, the Site was placed under the "Time-Critical Removal Action" category by EPA and has a Superfund Site ID of #A898, but is not on the National Priorities List (NPL). The investigative and regulatory history is detailed in the Stage I Work Plan (URS 2014a), and summarized as follows:

- Several environmental consultants conducted a number of Phase I and Phase II investigations at the Site between 1999 and 2013.
- Based on findings from a Phase II investigation that LT Environmental, Inc. (LTE) conducted in March 2013 (LTE 2013), EPA contacted TDCC in mid-2013 regarding the

Site and a meeting was held on site August 14, 2013 between EPA, TDCC, Hi-Tec, URS, and LTE.

- EPA, TDCC, Hi-Tec, and URS participated in multiple conference calls and meetings between August 2013 and October 2013 to scope the PCB removal action.
- URS submitted the *Draft Investigation and Removal Action Work Plan* to EPA on October 28, 2013 (URS 2013), after which negotiations took place between EPA, Hi-Tec, and TDCC in preparation of *The Administrative Settlement Agreement and Order on Consent* (Settlement Agreement), which was executed by EPA on January 30, 2014.
- EPA gave TDCC's contractor, URS, verbal approval on February 13, 2014 to commence with the Stage I investigation activities and URS submitted the Stage I Work Plan on February 28, 2014 (URS 2014a), which EPA approved on March 24, 2014. Stage I field activities were conducted in February and March 2014. A Stage I Summary Technical Memorandum was submitted on May 1, 2014 (URS 2014b).
- A Stage II Removal Action Work Plan (URS 2014c) was submitted on May 23, 2014.

The Stage I and Stage II Work Plans (URS 2014a and 2014c) addressed the work outlined for TDCC in the Settlement Agreement, specifically to investigate and remove PCBs in concrete and soil. Per the Settlement Agreement, the actions to be implemented at the Site include:

- Additional sampling of soils, concrete and building structure to better determine the scope of the removal action;
- Demolition of outer building structures;
- Excavation of contaminated concrete and soils underlying outbuildings; and
- Removal of concrete via grinding, where and if necessary.

These activities were completed through the Stage I field investigation and the removal action (Stage II). This report documents the following information as required in Section VIII Paragraph 27 of the Settlement Agreement:

> "*The final report shall include a good faith estimate of total costs or a statement of actual costs incurred in complying with the Settlement Agreement, a listing of quantities and types of materials removed off-Site or handled on-Site, a discussion of removal and disposal options considered for those materials, a listing of the ultimate destinations of those materials, a presentation of analytical results of all sampling and analyses performed, and accompanying appendices containing all relevant documentation generated during the removal action (e.g., manifests, invoices, bills, contracts, permits).*"

1.2 OBJECTIVES AND REQUIREMENTS

Per the Settlement Agreement, the removal action for this Site specifically focused on PCBs in soil. The goal of the removal action was as follows:

- Achieve a clean-up level of 25 ppm at the surface and within the top twelve inches. Below the top twelve inches, the goal of the removal action is to achieve a clean-up level of 100 ppm. All accessible contaminated soils and concrete at the Site will be replaced with clean soils and capped with concrete or asphalt.

As stated in the Settlement Agreement, the removal action was intended to "reduce human exposure to the hazardous substances by (1) removing the bulk of the PCB contamination and (2) reducing the mobility and transport of any remaining PCB contamination with the installation of a concrete cap." The following key elements were identified in the Settlement Agreement:

(1) additional sampling of the soils, concrete and building structure to better determine the scope of the removal action;

(2) demolition of outer building structures including Buildings A, C and all or a portion of Building B;

(3) excavation of contaminated concrete and soils underlying Buildings A, B and C, as determined necessary, to achieve appropriate clean up levels;

(4) removal of concrete via abrasive grinding, where appropriate;

(5) cleaning of any PCB contamination remaining on the walls of the building structure;

(6) proper disposal of PCB-contaminated wastes in a regulated landfill; and

(7) replacement of the concrete to provide a cap for any PCB contamination left in place. The removal of PCB contamination in Building D will be determined following additional sampling and assessment.

Applicable or Relevant and Appropriate Requirements (ARARs) were identified and in Appendix A of the Settlement Agreement, and were presented in Table 1 of the Removal Action Work Plan (URS 2014a).

As described in this report, the building was cleaned and accessible PCB contaminated concrete and soils were removed to achieve the cleanup levels; however, soils impacted with PCBs were left in place in one area beneath Building D. PCB-impacted soil was not removed so that the footer/foundation would remain protected, as discussed in Section 2.5.7.

1.2.1 Progress Reports

Monthly progress reports have been submitted as required in Section VIII, Paragraph 26, that states that a written progress report concerning action undertaken pursuant to the Settlement Agreement be submitted every 30th day after the date of receipt of EPA's approval of the Work Plan until termination of the Settlement Agreement, unless otherwise directed in writing by the On-Scene coordinator (OSC). The Work Plan was approved by EPA on March 24, 2014.

1.3 SUMMARY

The removal action achieved the project objectives through implementation of the Stage I Work Plan (URS 2014a) and the Stage II Removal Action Work Plan (URS 2014c). The removal action included building cleaning to remove PCB-contaminated dust, demolition and removal of Building C, demolition and removal of PCB-contaminated concrete, and excavation and removal of PCB-contaminated soil. A brief description of the Site contractors, chronology, and EPA/property owner communications are included in the following subsections.

1.3.1 Contractors

URS's subcontractor for the removal action field work was CTI and Associates, Inc. (CTI). CTI performed the building demolition, concrete, and soil removal. Additional contractors included:

- Building cleaning and insulation removal by Mac-Bestos, Inc. (lower-tier subcontractor to CTI)
- Laboratory analytical testing of wipes, concrete, and soil by Chemsolutions (subcontractor to URS)
- Surveying by KRW Consulting, Inc. (lower-tier subcontractor to CTI)
- Field density testing and concrete testing by Terracon consultants, Inc. (lower-tier subcontractor to CTI)
- Waste transportation and disposal by Clean Harbors (directly contracted by TDCC)

1.3.2 Chronology

The removal action activities were conducted at the Site from August through November 2014. Table 1 presents a chronological summary of the removal action activities that are further discussed in Section 2.

1.3.3 Communication and Site Visits – EPA and Hi-Tec Plastics (property owner)

During the removal action, there was frequent communication between URS, EPA, and Hi-Tec Plastics via email, phone conversations, and on-site meetings. EPA conducted periodic site visits and LT Environmental (LTE), environmental consultant for the property owner (Hi Tec Plastics), also conducted periodic field observations during the removal action and associated sampling. URS provided preliminary data to EPA so that real-time decisions could be made regarding progress and completion of the excavations. Copies of the Technical Memos and approvals are provided in Appendix A.

1.3.4 Project Cost

The estimated overall cost for the removal action was $1,572,000. Approximate costs are summarized below:

- Planning, removal action field work, reporting : 1,090,000
- Waste Disposal (Clean Harbors): $482,000

This page intentionally left blank

The Site removal action activities included building cleaning, building demolition, and removal of concrete and soil. This section discusses the site preparation activities, building cleaning/wipe sampling, concrete removal, excavation and sampling, off-site disposal, backfill, and concrete replacement, and final condition. The attached appendices support this field activity summary.

2.1 SITE PREPARATION

A pre-construction meeting was held on-Site on August 13, 2014, and was attended by EPA, URS, CTI, Mac-Bestos, Clean Harbors, and Hi-Tec.

2.1.1 Permitting

Because this removal action occurred under CERCLA, no federal, state, or local permits were required for work conducted on Site per the National Contingency Plan in 40 Code of Federal Regulations (CFR) §300.400(e). Notifications included disposal arrangements with approved disposal facilities (see Section 2.5). The City of Aurora was notified of the removal action activities.

2.1.2 Utility Locating

Prior to commencing the Stage I drilling activities, the general utility locations were identified and marked. In general, there are few underground utilities below the Site building. Utility locating was conducted again prior to beginning Stage II excavation work and suspected underground utilities were marked on the ground with color-coded marking paint in accordance with American Public Works Association standards (red for electrical line, blue for water line, green for sanitary/storm sewer line, orange for telecommunications, yellow for gas line, etc.).

At the beginning of the removal action activities, Mac-Bestos (the contractor conducting building surface cleaning) used the power plugs inside the building for their equipment. However, a thin live wire was encountered hanging from the ceiling during their work and the decision was made to shut off all power to the building for worker safety. Every visible power source inside the building was checked and confirmed to be de-energized. Following the power shut off to the building, a generator was brought to the Site for the power source.

2.1.3 Mobilization and Work Area Preparation

CTI mobilized to the Site, performed required utility locates noted above, placed temporary security fencing around the work area, and set up their field trailer. Other tasks included:

- Staging equipment and materials;
- Setting up work zones, loading areas, and investigation derived waste (IDW) storage;
- Hanging plastic sheeting for dust containment within building partitions;
- Installing stormwater pollution protection measures (i.e., straw wattles);
- Constructing required decontamination (personnel and equipment/vehicles) areas

2.1.4 Monitoring Well Abandonment

Prior to commencing demolition activities, groundwater monitoring wells identified within the demolition area were properly abandoned to seal off potential conduits to the subsurface in accordance with Rule 16 of the SEO "Water Well Construction Rules" (2 CCR 402-2, SEO 2005). Three wells were abandoned: BH-05, BH-06, and SMW-05. The saturated portion of the well's screen interval was filled with sand and the unsaturated portion of the screened interval and the unperforated casing was filled with bentonite to ground surface. The upper portion of the well casing and well vault were removed during demolition activities and restored to approximately match surrounding conditions (concrete). URS prepared and will submit the well abandonment forms, and these are included in Appendix B.

2.2 BUILDING CLEANING/WIPE SAMPLING

Stage I wipe sampling results (URS 2014b) indicated that dust on the interior walls in a portion of the building exceeded the PCB clean-up threshold of 10 $\mu g/100cm^2$ (EPA 1990) and that a majority of the building required cleaning to remove the PCB-contaminated dust and meet the cleanup threshold. Prior to commencing concrete demolition and soil removal activities, Mac-Bestos cleaned the interior walls, floors, ceilings, and accessible air ducts of Buildings B, D, E, F, G, H, and I. In Buildings B and F, blown-on insulation on the walls and ceilings was removed by scraping and wiping the insulation. Visible surface dust was removed by wiping and using a vacuum with a high efficiency particulate absorption (HEPA) filter. Ceiling tiles were removed from the offices in Building G and two rooms on the east side of Building I.

When the building cleaning was completed, URS collected wipe samples for laboratory analysis of total PCBs from walls, floors, ceilings, and select air ducts and fans. The wall, floor, and ceiling wipe samples were collected to assess whether cleaning activities had adequately reduced PCB concentrations. Fans and air ducts could not be safely cleaned by the wiping/vacuum method so wipe samples were collected at select locations to confirm the PCB concentrations were below the PCB clean-up threshold of 10 $\mu g/100cm^2$.

Wipe sample locations were selected randomly by building, as recommended by Visual Sample Plan (VSP), a software tool used to develop the sampling plan and statistical data analysis. In order to achieve a 95% confidence that 95% of the area was clean, the VSP program recommended collecting 59 samples, all of which must be less than the clean-up criterion. As shown on Figure 4, a total of 73 wipe samples were collected of which two samples were collected from ventilation fans in Building D and Building I, and two samples were collected from ducts in Building G. Analytical data results are shown on Table 2. The other 69 samples were collected from walls, ceilings, and floors in Buildings B, D, E, F, G, H, and I. As shown on Table 2, concentrations of total PCBs for the wipe samples were below the screening level of 10 $\mu g/100cm^2$, with the exception of the following:

- Sample WP-8 was collected in an area where concrete was removed, so although it was above the screening level initially, it was removed as part of the removal action.
- At sample locations WP-66 and WP-67, the preliminary data concentrations of total PCBs were slightly greater than 10 $\mu g/100cm^2$ but resampling confirmed that concentrations were less than 10 $\mu g/100cm^2$.

Appendix C includes the VSP statistical design of the sampling plan.

Following the building cleaning, Buildings B, D, and F were cordoned off with plastic sheeting so the removal of concrete and soil did not spread additional dust throughout the building.

After the concrete and soil removal, an additional four wipe samples were collected to confirm that the removal action activities did not spread dust throughout the building (see WP-68, WP-69, WP-70, and WP-71). Results of these wipe samples were less than the PCB clean-up threshold of 10 $\mu g/100cm^2$.

2.3 BUILDING C DEMOLITION

As shown on the Photo Log in Appendix D, Building C was demolished by disassembling walls panels, ceiling panels, and structural members. Building C was completely demolished with the exception of the common wall shared with Building D. The approximate size of Building C was 2,933 square feet with a ceiling height of approximately 11 feet. Demolition equipment included a mini excavator, skidsteer, and cutting torch to dismantle the various components of the building and downsize for disposal. After the demolition, the waste was sized for disposal and it was loaded in roll-offs for disposal as described in Section 2.6.

2.4 CONCRETE REMOVAL

Concrete was sawcut, demolished, and removed in areas where soil was to be excavated, or where total PCB concentrations in the concrete exceeded clean-up levels during the Stage I investigation. Concrete removal areas are shown on Figure 5. Concrete sampling is discussed in Section 2.5 and Table 3.

Except in areas next to walls, concrete was removed such that a 10-ft buffer zone of undisturbed soil/subgrade between the soil excavation extents and the sawcut line was preserved. The concrete demolition was conducted using a water-cooled sawblade, a handheld jack-hammer near walls, or a jack-hammer attachment on the excavator. Once concrete was broken into manageable pieces, it was loaded onto the skidsteer and placed into roll-offs.

2.4.1 Double Tee Wall Foundation Test Pad

Because the extent of the building foundation below the double tee walls was unknown, a test pad was excavated to expose the foundation/footer on either side of the wall. The top of the footing on both sides of the wall was exposed so that a URS structural engineer could determine the lateral extents of the footing on both sides.

On September 3, 2014, a structural engineer from URS conducted an inspection of the test pad and provided the trip report included in Appendix E. The double tee wall footing was located approximately 2 feet below the top of the existing slab and appeared to be primarily supported at the tees with plate supports provided intermittently. During the excavation of the test pad, CTI encountered cables that were embedded into the concrete slab. Based on the structural engineer's inspection and recommendations, the concrete within 2 feet of the building walls was removed prior to the demolition of the slab within the building. This was necessary to reduce the disturbance on the walls during demolition of the slabs. Also, based on the structural engineer's recommendations, the concrete removal near the walls was performed with a less destructive method (handheld jackhammer rather than excavator hammer).

Another recommendation resulting from the structural engineer's inspection was that a clearance of 3 feet from the edge of the footer was maintained before excavating below the top of the footing. This was a deviation from the Work Plan which specified a clearance of 3 feet from the stem of the tee wall.

2.4.2 Press Pit Removal

The former press pit, located within the Excavation 7 area (Figure 5), required a significant amount of time to demolish and remove because it was essentially a solid block of concrete. As shown in the Photo Log in Appendix E, the press pit appeared to have been filled with concrete, and was originally constructed with reinforced steel and rebar. The press pit was approximately 18 feet long, 13 feet wide, and 4 feet deep. Concrete was broken into manageable size pieces and placed in a roll-off for disposal.

2.4.3 Air Monitoring and Dust Suppression

Continuous monitoring with a real-time dust monitor was conducted in the operators' and personnel's breathing zones during concrete sawcutting, concrete breaking, and soil excavation activities. The monitor was placed as close as practical to the point where the highest visible dust concentrations could be identified. A water mist was continually applied to work areas to help reduce dust generation.

2.5 EXCAVATION AND SAMPLING

Soil was excavated in seven different excavation areas inside Building B, D, and F, and outside of the building after Building C was demolished and removed. The excavation locations are shown on Figure 5.

Excavation equipment included an excavator and a skidsteer. Soil was excavated to depths shown in the following table:

Table 4 - Excavation Depths

Building	Excavation #	Excavation Depth (feet below ground surface)
Building B	Excavation 1	4
Building D	Excavation 2	1
Building F	Excavation 3	1
Former Building C	Excavation 4	4
Building D	Excavation 5	2
Former Building C	Excavation 6	4
Building D	Excavation 7	6

Excavations deeper than four feet were benched per Occupational Safety and Health Administration (OSHA) requirements and the excavations were observed daily by the URS

Representative. Horizontal and vertical excavations continued until confirmed samples resulted in total PCB concentrations lowers than the clean-up level or the excavation could no longer continue based on proximity to the building foundation/footer.

Initial excavation limits were estimated based on results from the Stage I field investigation. Following concrete removal and soil excavation based on the original estimated extents, confirmation soil samples were collected on the floors and sidewalls of each excavation. If the confirmation sample results indicated the sidewall or floor results met the clean-up criteria, then no additional excavation was performed in that area. If sample results indicated that the clean-up criteria had not been met, then additional soil was removed in that area and confirmation samples were taken from the new sidewall or floor. Sampling details are provided in the following subsections. Field sampling records are provided in Appendix F, survey data is provided in Appendix G, and detailed laboratory results are provided in Appendix H.

2.5.1 Excavation 1

Soil samples were collected from the north, east, south, and west sidewalls, and floor of Excavation 1, as shown on Figure 6. The initial floor excavation sample (EXC-6) result exceeded the clean-up level of 100 mg/kg (greater than 1-ft below ground surface) so additional soil was removed from the floor of the excavation. Another floor confirmation sample was collected following the additional soil removal (EXC-10), and the result was less than the clean-up level of 100 mg/kg. Sidewall sample results were less than the clean-up level as shown in Table 5.

Results show this excavation meets the clean-up criteria and is complete. The excavation was backfilled as described in Section 2.7.

2.5.2 Excavation 2

Soil samples were collected from the north, east, and west sidewalls, and the floor of Excavation 2, as shown on Figure 7. Concrete samples were collected from the north, east, and west edges of the excavation. Sample results for Excavation 2 soil and concrete samples were below the clean-up level of 25 mg/kg (0-1-ft below ground surface) as shown in Tables 3 and 6.

Results show this excavation meets the clean-up criteria and is complete. The excavation was backfilled as described in Section 2.7.

2.5.3 Excavation 3

Soil samples were collected from the north, east, south, and west sidewalls, and the floor of Excavation 3, as shown on Figure 8. The first north sidewall sample (EXC-4) result and the first west sidewall sample (EXC-3) results both exceeded the clean-up level of 25 mg/kg. Therefore, additional concrete and soil were removed from the north and west sides of the excavation. A soil sample was collected from the north sidewall after additional soil removal (EXC-11) and the result was less than the clean-up level of 25 mg/kg. The west sidewall sample, collected after additional soil removal (EXC-65), exceeded the clean-up level of 25 mg/kg. Another 2 feet of concrete and soil were removed and another step-out soil sample (EXC-71) was collected from the west sidewall. After removal of additional soil on the north and west sides of Excavation 3, results were less than the clean-up level of 25 mg/kg. Results are shown in Table 7.

Results show this excavation meets the clean-up criteria and is complete. The excavation was backfilled as described in Section 2.7.

2.5.4 Excavation 4

One floor, nine sidewall, three step-out sidewall samples, and one concrete sample were collected from Excavation 4, as shown on Figure 9. The excavation was benched and samples were collected at varying depths. The initial soil samples collected on the east side of Excavation 4 (EXC-27 and EXC-29) exceeded the clean-up level of 100 mg/kg. Additional soil was excavated and three step-out soil samples were collected (EXC-66, EXC-67, and EXC-68). After the additional soil removal, Excavation 4 soil results are below the clean-up level of 100 mg/kg. Results are shown in Tables 3 and 8.

Results show this excavation meets the clean-up criteria and is complete. The excavation was backfilled as described in Section 2.7.

2.5.5 Excavation 5

Three floor samples, five sidewall samples, and one concrete sample were collected from Excavation 5, as shown on Figure 10. Results from each of these sample locations were less than the clean-up levels of 25 mg/kg and 100 mg/kg. Results are shown in Tables 3 and 9.

Results show this excavation meets the clean-up criteria and is complete. The excavation was backfilled as described in Section 2.7.

2.5.6 Excavation 6

Soil samples were collected from varying depths on the north, east, south, and west sidewalls, and the floor of Excavation 6, as shown on Figure 11. A concrete sample (CON-7) was collected on the east side of former Building C, as shown on Figure 11. Sample results for Excavation 6 soil and concrete samples were below the clean-up level of 25 mg/kg (0-1-ft below ground surface) and 100 mg/kg (greater than 1-ft below ground surface). Results are shown in Table 3 and 10.

Results show this excavation meets the clean-up criteria and is complete. The excavation was backfilled as described in Section 2.7.

2.5.7 Excavation 7

Four floor samples, 16 sidewall samples, and five step-out samples were collected from Excavation 7, as shown on Figure 12. The excavation was benched and samples were collected at varying depths. Two initial soil samples collected on the north side (EXC-49 and EXC-50) and one sample on the west side of Excavation 7 (EXC-62) had results exceeding the clean-up criteria of 100 mg/kg. Detailed discussion is provided below regarding the north sidewall and west sidewall areas.

Excavation 7, North Sidewall

The north sidewall of Excavation 7 was excavated and benched to maintain the specified clearance of 3-feet from the edge of the building foundation footer before benching the excavation. Sample EXC-49 was collected on the 4-ft bench and sample EXC-50 was collected on the 6-ft bench. The result for EXC-50 was 389 mg/kg; therefore additional soil was removed from the 6-ft bench and a step-out sample was collected (EXC-70). The PCB result from EXC-70 was below the clean-up level of 100 mg/kg.

The soil where EXC-49 was collected on the 4-ft bench (4-ft deep) could not be further excavated because of the specified clearance of 3-feet (3-ft horizontally) from the edge of the footer. This clearance was necessary to avoid excavating soil from an area that may be helping resist load, which would potentially reduce the building wall stability. Because of the structural requirement to maintain the 3-ft clearance from the footer, additional soil could not be removed in this area without potentially jeopardizing building stability.

Excavation 7, West Sidewall

In the northwest area of Excavation 7, additional soil was removed in the area of EXC-62 (west sidewall). A step-out sample was collected (EXC-69) and results of EXC-69 still exceeded the clean-up level of 100 mg/kg. Additional soil was excavated towards the west and three more step-out samples were collected (EXC-72, EXC-73, and EXC-74) from the floor and sidewalls. After this additional soil removal, confirmation sample results were less than the clean-up level of 100 mg/kg. Results are shown in Table 11.

Results show that Excavation 7 meets the clean-up criteria with the exception of the area near the footer of the building on the north sidewall where additional soil could not be removed without potentially jeopardizing building stability (EXC-49 area, approximately 4-ft below ground surface). The total PCB concentration of sample EXC-49 was 348 mg/kg. This north sidewall area of Excavation 7 is considered complete although the total PCB concentration of sample EXC-49 (348 mg/kg) is greater than the clean-up level of 100 mg/kg. The soil at this localized area could not be further excavated because of the specified clearance of 3-feet (3-ft horizontally) from the edge of the footer. This clearance was necessary to avoid excavating soil from an area that may be helping resist structural load, which would potentially reduce the building wall stability. This issue was communicated to EPA at the time, and EPA approved leaving the soils in place so that the building could remain intact. Note that the Settlement Agreement states:

> "*In the event that PCB concentrations remain in place above clean up levels at completion of the removal action, the soils and/or foundation will be capped (with concrete) to prevent human exposure and to reduce PCB migration from infiltration and/or wind transport. Additional post-removal site controls, such as covenants governing future land use or soil disturbance may be required based on the extent of contamination left in place.*"

The excavations were backfilled and the soil was capped with concrete following removal of the PCB contaminated soil. Post-removal site controls, including this area, will be addressed by EPA and the property owner.

2.6 OFF-SITE DISPOSAL

Demolition debris, concrete, excavated soil material, plastic sheeting, sampling supplies, and used personal protective equipment (PPE) were loaded into lined roll-off bins. These roll-off bins were placarded, covered, manifested, and then transported to the Clean Harbors Grassy Mountain Landfill Facility in Grantsville, Utah. Waste material was not segregated into different stockpiles/roll-off bins based on concentrations, but rather was all sent to the Grassy Mountain Landfill Facility as soil/debris contaminated with PCB oil. During the planning stages of the removal action, other disposal facilities were considered, however TDCC selected the Grassy Mountain Landfill as suitable to receive the variety of waste with varying PCB concentrations.

Disposal facilities were found acceptable by the CERCLA "Off Site Rule" (OSR) and received 40 CFR 300.440 acceptability determinations for off-site disposal from EPA (email from Joyel Dhieux on August 7, 2014). In addition to the EPA approval of the disposal facilities, the Director for Division of Solid and Hazardous Waste at the Utah Department of Environmental Quality was notified of the PCB waste material disposal over 10 cubic yards, as required in Section VIII Paragraph 28(a)1 of the Settlement Agreement. This notification letter is included in Appendix I.

There were approximately 885 tons of material removed from the Site in 88 covered roll-off bins. A small amount of liquid waste (20 gallons) was generated from decontamination procedures. This liquid waste was transported by tote to the Clean Harbors Facility in Coffeyville, Kansas. Disposal of the liquid at the facility in Kansas was a deviation from the Work Plan. The liquid waste was originally going to be transported to a facility in Clean Harbors facility in Aragonite, Utah, however, the waste profile was approved at multiple facilities and based on routing changes and company backlog, Clean Harbors shipped the waste to the Kansas facility. Appendix I contains copies of the manifests and certificates of disposal for the 88 roll-off bins transported to Utah for disposal and1 tote transported to Kansas for disposal.

2.7 BACKFILL

Following removal of PCB contaminated materials, collection of confirmation soil sample results, and review of the preliminary analytical results with EPA, excavations were backfilled with non-contaminated soil.

2.7.1 Soil Material

Backfill soil material was obtained from an off-site source provided by Martin Marietta from Golden, Colorado. Details on the backfill material are provided in Appendix J. Prior to delivery on Site, the backfill soil material was sampled and analyzed for volatile organic compounds, semi-volatile organic compounds, metals, herbicides, pesticides, and PCBs and it was confirmed that the backfill soil was clean and suitable for use. Laboratory results for the backfill soil are provided in Appendix J. In addition to the chemical analyses, soil classification, grain size, moisture content, Atterberg limits, and Standard Proctor tests were conducted on the backfill soil material. Results of these tests are also included in Appendix J. In addition, fill material met gradation requirements specified in the following table.

Table 12 - Engineered Fill Gradation

US Sieve Size	Percent Passing by Weight
3/4 "	96 - 98
No. 4	30 - 65
No. 8	25 - 55
No. 200*	3 - 12
Liquid Limit	30 MAX

Notes:
*Percent passing the No. 200 sieve determined by Wash Test (ASTM C 117).
Fraction passing the No. 200 sieve shall not be greater than 2/3 of the fraction passing the No. 40 sieve.
" = inch
MAX = maximum
US Sieve = U.S.A. Standard Test Sieve

2.7.2 Compaction of Backfill Soil Material

Prior to backfilling, the subgrade was "proof-rolled" to identify soft pockets and areas of excessive yielding. The backfill soil material was placed in layers not more than 6 inches in loose depth and was compacted. The subgrade was uniformly moistened before compaction to within 2 percent of optimum moisture content as determined by ASTM D 698 (ASTM 2012). The soil material was placed evenly on both sides of structures (e.g. walls) to required elevations, and uniformly along the full length of each structure with compaction to not less than the 95 percent of maximum dry unit weight according to ASTM D 698 (ASTM 2012) (for locations a minimum of 10 feet from existing structural walls), and to not less than 90 percent of maximum dry unit weight according to ASTM D 698 (ASTM 2012) (for locations within 10 feet of existing structural walls).

2.7.3 Grading

The subgrade was uniformly graded to a smooth surface, free of irregular surface changes. The tolerance inside the building was a finished subgrade of ½ inch when tested with a 10-ft straightedge.

2.7.4 Field Quality Control

Terracon, Inc., a local qualified geotechnical engineering testing company performed the field quality control tests and inspections. URS personnel also observed the backfill placement and compaction testing. Compaction tests were implemented in place every 30 feet of length and a minimum of once per lift per excavation area. If the subgrade, fill, or backfill did not achieve the degree of compaction specified, the lift was scarified and moistened or aerated, recompacted, and retested until the specified compaction was obtained. Compaction tests are included in Appendix K.

2.8 CONCRETE REPLACEMENT

Design

The replacement concrete slab was designed to withstand a heavy warehouse load as defined in ASCE-7 Table 4-1 (ASCE 2010) and wheel loading from small equipment per methods outlined in ACI 360R Guide to Design of Slabs-on-Ground (ACI 2010). In addition, in an effort to reduce the flexure in the slab, the new slab was designed to sit over an engineered fill material. Based on a bearing capacity calculation conducted for the imported structural fill specified in the Project Specifications (Stage II Work Plan [URS 2014c]), a modulus of subgrade reaction of approximately 220 pounds per cubic inch was calculated and used for design. Based on the calculated modulus of subgrade reaction and the loading described above, flexural stress was estimated per ACI 360R (ACI 2010) and compared to an allowable flexural capacity of the uncracked slab with reinforcement provided to satisfy temperature and shrinkage requirements.

The resulting configuration was a new concrete slab with a minimum thickness of 8.5 inches to be reinforced with one mat of #5 rebar spaced at 12-inches on center, each way, with a minimum cover of 2.0 inches. A minimum concrete compressive strength of 4,000 pounds per square inch was used for the design calculations and specified for construction. In an effort to minimize differential movement between the new and existing slabs, #5 epoxy anchored dowels were specified to be embedded a minimum of 15 inches into the existing slabs and 20 inches into the new concrete. At the interface between the new and existing slabs, contraction joints were specified to reduce the potential for cracking. Due to the lack of information on the original building/slab design, the connections between the existing walls and the new slab were designed to match existing conditions so as not to alter the existing interaction between the slab and walls. Joints between sections of new concrete slab were specified as control joints with a maximum spacing of 18 feet to reduce the potential for formation of temperature and shrinkage cracks in the new concrete.

Construction

Construction of the new concrete slab, replacing portions of the existing slab that were removed from Buildings B, D, and F began on November 4, 2014 and was completed on November 14, 2014. While the original design specified control joints with through reinforcement, in an effort to simplify construction, joints in the new concrete slab were saw-cut, allowing for fewer individual placements. While saw-cut joints are considered contraction joints, traditionally containing dowels at the saw-cut locations, providing continuous reinforcement at the saw-cut joint locations (similar to control joints) was deemed an acceptable alternative. The resulting joints were saw-cut approximately ¼ depth of the slab, within 24 hours of each placement, and spaced to match the existing joint patterns or not to exceed 18 feet. In order to avoid damaging the reinforcement during saw cutting operations, the reinforcement was installed to maintain a 2.5 inch clearance from the exposed face. At the interface between the new and existing slabs, bond breaker was applied to develop contraction joints, in accordance with the Project Specifications (Stage II Work Plan [URS 2014c]). A test pad was evaluated by URS during demolition in an effort to evaluate the connections of the existing concrete slab to the concrete walls (see Section 2.4 for more information). Based on this inspection, cables connected to the existing concrete walls were found to have been embedded into the existing slab. While the cables do not appear to have been intended to provide lateral restraint to the double tee wall panels, the cables were cleaned and cast back into the new concrete slab.

The new slab was constructed in two separate placements. On November 10, 2014 approximately 35.5 cubic yards of concrete were placed at Building B, F, the Southwest corner of Building D, and a portion of the Northwest area of Building D. The second placement occurred on November 14, 2014 and consisted of placing 58 cubic yards in the remaining portion of the Northwest area of Building D. Formwork with through reinforcement was constructed to develop a control joint between the two placements in the Northwest area of Building D. Prior to concrete placement, pre-placement inspections were conducted by URS to check that the reinforcement, subgrade, and jointing were prepared in accordance with the Project Specifications (Stage II Work Plan [URS 2014c]) (see Moline St. Reinforcement/Subgrade Inspection Trip Reports dated 11/7/14 and 11/11/14 provided in Appendix E for more information). In addition, a structural engineer with URS was present during the first concrete placement to observe that the testing and placement were conducted in accordance with the Project Specifications (Stage II Work Plan [URS 2014c]), (see Moline St. Concrete Placement Observation Summary Trip Report dated 11/10/14 in Appendix E for more information). URS construction manager Bob Cover and a representative from Terracon Inc. were onsite to observe and test the concrete placed on 11/14/14. Notes of the placement can be found in Mr. Cover's daily log and results from the concrete testing in the Terracon Report No. 25171623.0027 (provided in Appendix E).

Concrete Testing

Procedures for testing included field sampling of freshly mixed concrete, curing of concrete cylinders, and breaking cylinders to determine compressive strength. The concrete testing was performed by ACI certified personnel experienced in the test methods. ASTM standards C31, C39, C138, C143, C172, C231, and C1064 were followed to obtain the test results. Concrete samples were collected at the point of discharge (truck or pump). Concrete testing included measurement of slump, temperature, air content, unit weight, and strength to verify compliance with the Project Specifications (Stage II Work Plan [URS 2014c]). For each set of field tests conducted, 5 test cylinders were cast for compression testing at 7 and 28 days. Compressive strength testing consisted of one test cylinder broken at 7-days, 3 cylinders broken at 28-days, and 1 test cylinder held in case testing beyond 28-days became necessary. Results from the concrete testing are presented in the table below.

Table 13 - Concrete Test Result Data

Sample Date	Mix ID	Slump (in.)	Temperature (°F)	Air (%)	Unit Weight (pcf)	Compressive Strength					Pass/Fail
						7-Day (psi)	28-Day (psi)	28-Day (psi)	28-Day (psi)	Average 28-Day Strength	
11/10/2014	19618	3.75	71	6.9	140.6	5580	6560	6120	6240	6300	Pass
11/10/2014	19618	2	76	5.4	141.8	4920	6110	5910	5820	5940	Pass
11/14/2014	19618	3.5	65	5.1	143.6	4990	6660	6380	6550	6530	Pass
11/14/2014	19618	3.25	65	5	141.6	4750	6110	6400	6500	6330	Pass

A total of 93.5 cubic yards of concrete were placed at Moline St. resulting in 20 concrete test cylinders being cast. The average 28-day compressive strength for all the breaks is 6280 pounds per square inch. The concrete test results indicate that both placements at Moline St. meet the specified minimum 28-day compressive strength requirements of 4,000 psi at 28 days. Based upon a review of the field test data and their associated compressive strengths, the concrete placed has been determined to meet the specified minimum design requirements.

2.9 FINAL CONDITION

Temporary facilities including staging and laydown areas, fencing, and temporary utilities were removed from the Site upon completion of the field activities. Final Site cleaning consisted of removal of plastic sheeting between buildings and building sweeping to remove any remaining debris. Construction equipment, tools, supplies, the field trailer, storage containers, and portable toilets were removed from the Site. Waste material was removed from the site as described in Section 2.5. Surplus rebar was left inside Building D for the property owner.

CTI installed a temporary door cover of treated plywood and wood bracing for the doorways between former Building C and Building D. The plywood completely covered the doorways that had previously led into Building C. Because TDCC was not responsible for the concrete replacement outside of the building (former Building C), the area was left covered with plastic and sandbags (see Appendix D Photographs).

A final building walk-through was attended by the property owner (Louis Hard, Hi-Tec Plastics), Susan Borden (LT Environmental), URS (Karen Maestas and Sarah Lave), and CTI (Ronnie Weeks) on November 17, 2014. The EPA representative was unable to attend the building walk-through on November 17, 2014 so URS (Sarah Lave) met with Paul Peronard with EPA on November 20, 2014. Mr. Peronard verbally approved of the Site final condition on November 20, 2014 and this date was considered the completion of field work.

American Concrete Institute 360R-10 (ACI, 2010). *Guide to Design of Slabs-on-Ground*, 2010.

American Society of Civil Engineers 7-10 (ASCE 2010). *Minimum Design Loads for Buildings and Other Structures*, 2010.

American Society for Testing and Materials D698-12, (ASTM 2012). *Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort*, 2012.

LT Environmental Inc. 2013. Limited Phase II Environmental Site Assessment. May 14.

URS Greiner Woodward Clyde. 1999. Phase II Investigation Report for the Dow Chemical Magnesium Extrusion Facility, Aurora, Colorado. January.

URS. 2014a. Revised Draft Investigation and Removal Action Work Plan, Moline Street PCB Site, Aurora, Colorado. February 28.

URS. 2014b. Stage I Summary Technical Memorandum, Moline Street PCB Site, Aurora, Colorado. May 1.

URS. 2014c. Stage II Removal Action Work Plan, Moline Street PCB Site, Aurora, Colorado. May 23.

TDCC. 1999. Letter from Ben Baker of TDCC to Barbara O'Grady at CDPHE. "Waste Determination- Dow Chemical Magnesium Fabricated Products, Facility, Aurora, Colorado." January 25.

This page intentionally left blank

Table 1
Removal Action Activity Schedule Summary
Moline Street PCB Site, Aurora, CO

ACTIVITY	DATE
Pre-construction meeting	August 13, 2014
Mobilization	August 18-22, 2014
Decontamination zones set up for Buildings B and F	
Survey control point established and existing features and concrete demolition areas surveyed	
Waste load out zone setup at Building I	
Installation of critical barriers	
Began dust and debris and cleaning of Building C	
Dust and debris collection and cleaning of Building C completed	August 25-29, 2014
Dust and debris collection and cleaning of Building D completed	
Electrical and air conduit from Buildings C and D cut	
Tile and duct work removed from Building G	
Demolition and cleanup of Building C completed	
Began dust and debris and cleaning of Building B	
Layout areas for concrete demolition in Building D	
Saw cutting of concrete slab in Buildings C and D completed	September 2-5, 2014
Test pit excavated on both sides of tee-wall connecting Buildings C and D	
Cleaning and removal of insulation from Building B completed	
Began cleaning and removal of insulation in Building F	
Upper concrete slab removed from Building B and demolition of lower slab began	
Cleaning and removal of insulation from Building F completed	September 8-12, 2014
Removal of ceiling tiles, insulation, and duct work from Building G completed	
Began cleaning of Building E	
Completed removal of both concrete slabs from Building B	
Topographic survey of concrete slab and excavation in Building B completed	
Concrete slab was cut, demolished, and removed from Building F along with 1' of contaminated soil	

Table 1
Removal Action Activity Schedule Summary
Moline Street PCB Site, Aurora, CO

ACTIVITY	DATE
HEPA vacuum cleaning of Buildings E, H, and I completed	September 8-12, 2014
Saw cutting of the interior and exterior walls of Building D completed	
Concrete and soil removal excavation survey was completed	
Wipe and soil sampling in Buildings B, F, and G conducted	
Began demolition of the 3' concrete strip along inside of Building D	
Phase II cleaning completed, pending wipe samples	
Mac-Bestos demobilizes	
Demolition of the 3' concrete strip along inside of Building D completed	September 15-19, 2014
Demolition of the 3' concrete strip along outside of Building D completed	
Wipe samples collected from Buildings E, H, and I	
Additional 2' of soil removed from excavation in Building F due to PCB detection	
Additional 2' of soil and concrete slab removed from Building F excavation	September 22-26, 2014
Concrete from Buildings C and D demolished and loaded out	
Cut additional 1' of concrete from north, east, and west sides of Building D excavation for sampling	
Monitoring wells BH-05 and SMW-05 abandoned	
2'x2' square cut around well BH-06	
Continue concrete and soil sampling	
Plastic installed over exposed soil in Building C	
Topographic survey of completed excavation at the southwest corner of Building D, additional 1' of excavation in Building F, and bottom of concrete in the northeast corner of Building C	September 29-30, 2014
Began excavation around the concrete mass at the press pit in Building D	
Continued demolition of the press pit in Building D	

Table 1
Removal Action Activity Schedule Summary
Moline Street PCB Site, Aurora, CO

ACTIVITY	DATE
Remove wet soil in Building F and replace with dry compacted soil	October 29-31, 2014
Remove sheeting between Buildings D and B and disassemble the decontamination chamber north of Building B	
Backfill and compaction in Building B completed	
Backfill and compaction in Building D east excavation completed	
New plastic cover placed outside of Building C to protect soil	
Drill dowel bars, set dowels in epoxy, and place rebar	November 4-8, 2014
Compaction of lifts completed	
Site cleanup	
Place concrete and finish floors	November 10-12, 2014
Test concrete	
Boarding up door between Building D and former Building C	
Site cleanup	
Final building walk through with URS, CTI, Hi-Tec and LTE	November 17, 2014
Final building walk through with EPA	November 20, 2014

Table 2
Summary of Wipe Sample Analytical Results
Moline Street PCB Site, Aurora, CO

Sample ID	Collection Date	Analyte	Analytical Results (µg/wipe [100 cm^2])	Reporting Limit
WP-1-D-W-5	9/3/2014	PCB-1016	ND	0.20
		PCB-1221	ND	0.20
		PCB-1232	ND	0.20
		PCB-1242	ND	0.20
		PCB-1248	0.12 J	0.20
		PCB-1254	0.19 J	0.20
		PCB-1260	ND	0.20
		PCB-1262	ND	0.20
		PCB-1268	ND	0.20
		Total PCBs	**0.31** J	
WP-2-D-W-2	9/3/2014	PCB-1016	ND	0.20
		PCB-1221	ND	0.20
		PCB-1232	ND	0.20
		PCB-1242	ND	0.20
		PCB-1248	0.065 J	0.20
		PCB-1254	0.12 J	0.20
		PCB-1260	ND	0.20
		PCB-1262	ND	0.20
		PCB-1268	ND	0.20
		Total PCBs	**0.185** J	
WP-3-D-W-4	9/3/2014	PCB-1016	ND	0.20
		PCB-1221	ND	0.20
		PCB-1232	ND	0.20
		PCB-1242	ND	0.20
		PCB-1248	0.057 J	0.20
		PCB-1254	0.070 J	0.20
		PCB-1260	ND	0.20
		PCB-1262	ND	0.20
		PCB-1268	ND	0.20
		Total PCBs	**0.127** J	
WP-4-D-W-5	9/3/2014	PCB-1016	ND	0.20
		PCB-1221	ND	0.20
		PCB-1232	ND	0.20
		PCB-1242	ND	0.20
		PCB-1248	0.092 J	0.20
		PCB-1254	0.12 J	0.20
		PCB-1260	ND	0.20
		PCB-1262	ND	0.20
		PCB-1268	ND	0.20
		Total PCBs	**0.212** J	

Table 2
Summary of Wipe Sample Analytical Results
Moline Street PCB Site, Aurora, CO

Sample ID	Collection Date	Analyte	Analytical Results (µg/wipe [100 cm^2])	Reporting Limit
WP-4-D-W-5-FD	9/3/2014	PCB-1016	ND	0.20
		PCB-1221	ND	0.20
		PCB-1232	ND	0.20
		PCB-1242	ND	0.20
		PCB-1248	0.11 J	0.20
		PCB-1254	0.15 J	0.20
		PCB-1260	ND	0.20
		PCB-1262	ND	0.20
		PCB-1268	ND	0.20
		Total PCBs	**0.26** J	
WP-5-D-W-3	9/3/2014	PCB-1016	ND	0.20
		PCB-1221	ND	0.20
		PCB-1232	ND	0.20
		PCB-1242	ND	0.20
		PCB-1248	0.026 J	0.20
		PCB-1254	0.11 J	0.20
		PCB-1260	ND	0.20
		PCB-1262	ND	0.20
		PCB-1268	ND	0.20
		Total PCBs	**0.136** J	
WP-6-D-F-0	9/3/2014	PCB-1016	ND	1.0
		PCB-1221	ND	1.0
		PCB-1232	ND	1.0
		PCB-1242	ND	1.0
		PCB-1248	4.0	1.0
		PCB-1254	3.2	1.0
		PCB-1260	ND	1.0
		PCB-1262	ND	1.0
		PCB-1268	ND	1.0
		Total PCBs	**7.2**	
WP-7-D-F-0	9/3/2014	PCB-1016	ND	0.20
		PCB-1221	ND	0.20
		PCB-1232	ND	0.20
		PCB-1242	ND	0.20
		PCB-1248	0.62	0.20
		PCB-1254	1.7	0.20
		PCB-1260	ND	0.20
		PCB-1262	ND	0.20
		PCB-1268	ND	0.20
		Total PCBs	**2.32**	

Table 2
Summary of Wipe Sample Analytical Results
Moline Street PCB Site, Aurora, CO

Sample ID	Collection Date	Analyte	Analytical Results (µg/wipe [100 cm^2])	Reporting Limit
WP-8-D-F-0 (note: sample was collected in area where concrete was removed)	9/3/2014	PCB-1016	ND	0.20
		PCB-1221	ND	0.20
		PCB-1232	ND	0.20
		PCB-1242	ND	0.20
		PCB-1248	22	20
		PCB-1254	22	20
		PCB-1260	ND	0.20
		PCB-1262	ND	0.20
		PCB-1268	ND	0.20
		Total PCBs	**44**	
WP-9-D-Fan-E	9/3/2014	PCB-1016	ND	1.0
		PCB-1221	ND	1.0
		PCB-1232	ND	1.0
		PCB-1242	ND	1.0
		PCB-1248	3.1	1.0
		PCB-1254	3.5	1.0
		PCB-1260	ND	1.0
		PCB-1262	ND	1.0
		PCB-1268	ND	1.0
		Total PCBs	**6.6**	
WP-10-D-C-16	9/3/2014	PCB-1016	ND	0.20
		PCB-1221	ND	0.20
		PCB-1232	ND	0.20
		PCB-1242	ND	0.20
		PCB-1248	ND	0.20
		PCB-1254	ND	0.20
		PCB-1260	ND	0.20
		PCB-1262	ND	0.20
		PCB-1268	ND	0.20
		Total PCBs	**ND**	
WP-11-D-C-16	9/3/2014	PCB-1016	ND	0.20
		PCB-1221	ND	0.20
		PCB-1232	ND	0.20
		PCB-1242	ND	0.20
		PCB-1248	0.34	0.20
		PCB-1254	0.60	0.20
		PCB-1260	ND	0.20
		PCB-1262	ND	0.20
		PCB-1268	ND	0.20
		Total PCBs	**0.94**	

Table 2
Summary of Wipe Sample Analytical Results
Moline Street PCB Site, Aurora, CO

Sample ID	Collection Date	Analyte	Analytical Results (µg/wipe [100 cm^2])	Reporting Limit
WP-12-D-C-16	9/3/2014	PCB-1016	ND	0.20
		PCB-1221	ND	0.20
		PCB-1232	ND	0.20
		PCB-1242	ND	0.20
		PCB-1248	ND	0.20
		PCB-1254	ND	0.20
		PCB-1260	ND	0.20
		PCB-1262	ND	0.20
		PCB-1268	ND	0.20
		Total PCBs	**ND**	
WP-13-G-Duct1	9/3/2014	PCB-1016	ND UJ	1.0
		PCB-1221	ND UJ	1.0
		PCB-1232	ND UJ	1.0
		PCB-1242	ND UJ	1.0
		PCB-1248	1.2 J	1.0
		PCB-1254	2.1 J	1.0
		PCB-1260	ND UJ	1.0
		PCB-1262	ND UJ	1.0
		PCB-1268	ND UJ	1.0
		Total PCBs	**3.3** J	
WP-14-G-Duct2	9/3/2014	PCB-1016	ND	0.20
		PCB-1221	ND	0.20
		PCB-1232	ND	0.20
		PCB-1242	ND	0.20
		PCB-1248	0.12 J	0.20
		PCB-1254	0.28	0.20
		PCB-1260	ND	0.20
		PCB-1262	ND	0.20
		PCB-1268	ND	0.20
		Total PCBs	**0.4** J	
WP-15-B-C-16	9/10/2014	PCB-1016	ND	0.20
		PCB-1221	ND	0.20
		PCB-1232	ND	0.20
		PCB-1242	ND	0.20
		PCB-1248	0.12 J	0.20
		PCB-1254	ND	0.20
		PCB-1260	ND	0.20
		PCB-1262	ND	0.20
		PCB-1268	ND	0.20
		Total PCBs	**0.12** J	

Table 2
Summary of Wipe Sample Analytical Results
Moline Street PCB Site, Aurora, CO

Sample ID	Collection Date	Analyte	Analytical Results (µg/wipe [100 cm^2])	Reporting Limit
WP-16-B-C-16	9/10/2014	PCB-1016	ND	0.20
		PCB-1221	ND	0.20
		PCB-1232	ND	0.20
		PCB-1242	ND	0.20
		PCB-1248	0.21	0.20
		PCB-1254	ND	0.20
		PCB-1260	ND	0.20
		PCB-1262	ND	0.20
		PCB-1268	ND	0.20
		Total PCBs	**0.21**	
WP-17-B-W-7	9/10/2014	PCB-1016	ND	0.20
		PCB-1221	ND	0.20
		PCB-1232	ND	0.20
		PCB-1242	ND	0.20
		PCB-1248	0.67	0.20
		PCB-1254	2.1	0.20
		PCB-1260	ND	0.20
		PCB-1262	ND	0.20
		PCB-1268	ND	0.20
		Total PCBs	**2.77**	
WP-18-B-W-10	9/10/2014	PCB-1016	ND	0.20
		PCB-1221	ND	0.20
		PCB-1232	ND	0.20
		PCB-1242	ND	0.20
		PCB-1248	0.33	0.20
		PCB-1254	0.51	0.20
		PCB-1260	ND	0.20
		PCB-1262	ND	0.20
		PCB-1268	ND	0.20
		Total PCBs	**0.84**	
WP-19-B-F-0	9/10/2014	PCB-1016	ND	0.20
		PCB-1221	ND	0.20
		PCB-1232	ND	0.20
		PCB-1242	ND	0.20
		PCB-1248	0.85	0.20
		PCB-1254	0.66	0.20
		PCB-1260	ND	0.20
		PCB-1262	ND	0.20
		PCB-1268	ND	0.20
		Total PCBs	**1.51**	